

## **Working with ATP -- Perspectives from a Start-Up**

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**In the beginning...**



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- Project Title: A High-Density and High-Speed Read-Only Optical Data Storage System
- Awarded \$1.8M, ATP General Competition 94-01
- Program duration: 26 mos. (2/95 through 3/97)
- Calimetrics contributed \$0.7M plus \$0.25M award from California Trade & Commerce Agency

- Develop a CD-ROM type optical disc and reader with at least a **three-fold increase** in storage density and data transfer-rate by use of multiple pit-depths (Pit Depth Modulation)
- Reader head to be **backward-compatible** with existing CD-ROM discs, and **complementary** to other advances in CD-ROM technology including shorter wavelength lasers, faster spin-rates, and multilayer discs
- **Replication** of the CD-sized discs to be **similar to current techniques**

## ***Calimetrics*** \* Timing of Main Events Leading to Award

- April '94: Started work on proposal
- June 25: Submitted proposal
- August: Heard by phone that we made finals!
- September: Oral review in Washington
- Days later: Made "leap of faith"
  - committed full-time effort, started incorporation process, finding space, firmed up commitments of investors, advisors, team, etc.
- December: Moved into 2000 ft<sup>2</sup> lab/office
- March 17, '95: Received first reimbursement payment for award starting February 1, 1995

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## ***Calimetrics*** \* Items that helped to get award

- Option to exclusive license on technology IP
- Technology experts committed full-time to leading R&D
- Demonstrated commitment from investors, advisors, and team
  - Letters of intent do help!
  - Presence of subcontractor at orals
- Timeliness and usefulness of technology
- Lack of US presence in market

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- Raising add'l matching funds req'd
  - The ATP award is a “thumbs-up” from government & industry experts
  - VC & “angel” investors take you more seriously
- Getting better price for stock!
  - Also, founders can keep greater share of company
- Negotiating IP licensing terms
- Learning about add'l technical resources
  - e.g., NIST labs



## Evolution

- Original reader based on differential laser feedback interferometry (LFI)
  - Evolved to non-differential LFI, until we learned that standard CD read head was adequate!
- Original mastering based on laser ablation (Aerospace Corp.) or various etching methods
  - In the end, Aerospace couldn't play!
  - Evolved to anodization method, then direct write process
  - Moved finally to standard photoresist

- Market wouldn't support higher costs of technology
  - Needed to evolve technical implementation to fit within existing markets with minimal changes
- MMCD (Philips, Sony) & SD (Toshiba, Time-Warner) wars came along → DVD!
  - New challenge of 3× improvement over DVD

## What stayed the same?

- 3x performance increase via multiple pit depths (or multi-level reflectivity for R & RW)
- Replication using current industry techniques
- Our core team
- ATP support

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## What happened since then?

- 1st ATP award and progress on plan → corporate interest → VC investment
- This enabled further progress → corporate interest in variation of technology
- Variation included RW interest → Joint Venture ATP award (MORE project)
- Which led to a refined business direction (ML RW) → added corporate interest
- Finally, a customer!



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- Customer → refined market plan → more VC investment, this time mixed with corporate investment
  - including Texas Instruments for one!
- Which is leading to multiple market segments for a variety of fields of use and product types (ROM, R, and RW)



**Me, giving advice?**

- Take the proposal preparation kit seriously!
  - It tells you just about all you'll need for a winning proposal (except for the entrepreneurship you'll need to generate the ideas!)
- Proposal will grow with time, so allow plenty!
  - I personally know someone who FedEx'd proposal for last day delivery. FedEx screwed up and was late 1 day. Proposal rejected after 3 mos. work!
- It's a business plan! Albeit higher risk than most...
  - The "T" in ATP may be for Technology but the proposal needs BALANCE with clear path towards market

- Also balance team; supplement with respected advisors, (potential) partners, industry experts
- Slant towards a VC presentation BUT with the US economy as the benefactor of the investment
- Use up-to-date respected sources for both business and technical validation (e.g., latest technical journals, conference proceedings, etc.)
- Demonstrate clarity of vision
  - For example:
    - Detailed cap equipment budget
    - Partnership(s) interaction flow chart
    - Risk ID, assessment, and alternate plans or resources



- Prepare early for accounting: GAAP is not all.
  - You need to comply with Government Auditing Standards issued by Comptroller General (e.g., compliance with OMB, CFR, & FAR regulations)
- Quarterly reports
  - Business
    - Electronic report, minimal time involved
  - Technical
    - 1st report ~10-15 pgs. including detailed Gantt chart, clear objectives, measurable milestones, status, & changes...talk to your Project Manager about significant changes!
    - 6-10 pgs. each subsequent quarter

- Needs buy-in from top down!
- Needs full-time commitment to technology but most important part is project coordination & attention to evolving technology & market
- Especially in a JV
  - each partner has own ideas and agenda so it takes constant attention to keep the JV functioning as a team
  - “quarterlies” are much more than reports to Uncle Sam: they can also be an effective management tool to formalize “buy-in” from various partners
  - clear market focus keeps the research focused

- Prepare for hand-off from “R” to “D”
  - Plan for success!
  - Remember, ATP doesn't fund Development
  - Establish plan early for cont'd funding and support
  - Set clear boundaries for ease of management
  - Talk to your Project Manager!

**In the end...**